



## **Demand Estimation Sub Committee**

**EUC Modelling Approach – Spring 2019**

**11<sup>th</sup> February 2019**



# Objective

- The final objective of the “Model Principles” phase is to produce a Spring Approach document for the derivation of EUCs and Demand Models effective for Gas Year 2019/20, which is approved by DESC (Target: February 2019 meeting)
- The first draft of the Spring Approach was distributed to DESC and TWG members on 8<sup>th</sup> January 2019 for comment. The draft reflected the discussions at the 10<sup>th</sup> December 2018 DESC meeting
- Objective of today’s session is for DESC to:
  - Review any further comments that have been received on the draft Spring Approach
  - Consider stratification method when selecting sample sites
  - Decide if DESC can approve the latest version of the Spring Approach

# DESC Comments on Spring Approach

- Since the publication of the draft Spring Approach we have received some additional comments:
  - *“Where validated sample numbers available for modelling exceed target numbers can we provide information on source data used” – We’ll aim to do this*
  - *“ALPs and DAFs factors – what are your thoughts about including the calculation of the factors as part of this approach as an enduring improvement. Removing it from the UNC and having a consistent and documented calculation in the modelling approach?”*
  - We don’t believe the use of uplift factors to influence UIG should be used as an enduring solution. The uplift factors were agreed for use in GY18/19 as a mechanism to be used to reduce UIG volatility/ levels in the absence of imminent industry changes to tackle UIG. DESC’s aim should be to produce demand models which provide the best estimate of NDM demand with negligible modelling error and reduced reconciliation
  - We have updated the Spring Approach to allow for the use of uplift factors in GY 19/20 should DESC feel they are necessary for another year, however agreement will be needed on how the factors will be derived as the CDSP will not be in a position to calculate them

# DESC Comments on Spring Approach cont.

- Since the publication of the draft Spring Approach we have received some additional comments:
  - *“I recall last year that several EUC bands were affected by lower consumptions during the snow events. I suggested these are outliers and would likely impact the seasonality of the affected bands. Reducing the impact of these outliers can be done using robust regression, I don't think this approach is too far away from the least square regression used so might be straight forward to implement. The details are here: <https://stats.idre.ucla.edu/sas/dae/robust-regression/>. It's effectively a weighted least squares approach, where the weights are less for outlier observations, thus the outliers influence the models less”*
  - DESC decided last year to retain the 'snowy' demand days in the regression results as they felt they were genuine outliers i.e. real demand adjustments. CDSP support this approach which is consistent with previous instances
  - During the 18/19 modelling process we will see if such instances occur, however current modelling systems/processes would not be able to remove or alter demand values without causing serious re-work. Welcome DESC's views on this scenario ?

# Stratification of sample sites

- UiG taskforce findings showed that there are different weather sensitivities for small domestic users compared with the band 1 average.
- DESC agreed at it's meeting (10<sup>th</sup> Dec '18) that it would be good practice if the validated sample sites for the band 1 domestic model are sourced appropriately from the proposed sub bands: 0-10, 10-20, 20-30 and 30-73.2 MWh.
- DESC also agreed a similar stratification approach for Band 2 non-domestic models. This presentation proposes the sub bands to use.
- Where the validated sample points for a particular EUC band are well in excess of the ideal target numbers, DESC agreed that a process should be created to select the required number of sample points needed to be representative of the population (which means in these cases not using all of the sample points available). Xoserve and Network managed samples will be prioritised ahead of 3<sup>rd</sup> party data.

# Stratification of sample sites Band 1

	AQ Range				Total
	0 10,000	10,000 20,000	20,000 30,000	30,000 73,200	
LDZ	10,000	20,000	30,000	73,200	Total
EA	56	100	25	23	204
EM	31	92	21	19	163
NE	48	74	27	26	175
NO	46	68	21	15	150
NT	43	75	30	22	170
NW	44	88	16	22	170
SC	40	63	22	26	151
SE	54	84	26	13	177
SO	44	98	22	27	191
SW	78	78	18	12	186
WM	53	87	21	15	176
WN	0	0	0	0	0
WS	51	65	22	17	155
<b>Total</b>	588	972	271	237	<b>2068</b>

- We have reviewed the impacts of this stratified approach using last years 2017/18 sample data for Band 1, non prepayment, domestic sites
- This table shows the total number of sample points by LDZ distributed by the suggested AQ ranges

# Stratification of sample sites Band 1 cont...

- The tables below shows the distribution of the sample and population by LDZ and the suggested AQ ranges:

Sample						Population					
LDZ	0 – 10 MWh pa	10 – 20 MWh pa	20 – 30 MWh pa	30 – 73.2 MWh pa	Total	LDZ	0 – 10 MWh pa	10 – 20 MWh pa	20 – 30 MWh pa	30 – 73.2 MWh pa	Total
EA	27.45%	49.02%	12.25%	11.27%	100.00%	EA	37.10%	46.30%	12.10%	4.60%	100.00%
EM	19.02%	56.44%	12.88%	11.66%	100.00%	EM	34.50%	49.10%	12.30%	4.00%	100.00%
NE	27.43%	42.29%	15.43%	14.86%	100.00%	NE	34.60%	46.70%	13.40%	5.30%	100.00%
NO	30.67%	45.33%	14.00%	10.00%	100.00%	NO	34.90%	48.70%	12.50%	3.90%	100.00%
NT	25.29%	44.12%	17.65%	12.94%	100.00%	NT	39.60%	40.30%	13.60%	6.50%	100.00%
NW/WN	25.88%	51.76%	9.41%	12.94%	100.00%	NW/WN	38.40%	45.80%	11.60%	4.20%	100.00%
SC	26.49%	41.72%	14.57%	17.22%	100.00%	SC	37.80%	43.50%	13.30%	5.40%	100.00%
SE	30.51%	47.46%	14.69%	7.34%	100.00%	SE	39.20%	42.60%	12.70%	5.60%	100.00%
SO	23.04%	51.31%	11.52%	14.14%	100.00%	SO	39.00%	45.30%	11.40%	4.30%	100.00%
SW	41.94%	41.94%	9.68%	6.45%	100.00%	SW	47.90%	41.30%	7.70%	3.10%	100.00%
WM	30.11%	49.43%	11.93%	8.52%	100.00%	WM	35.30%	48.00%	12.50%	4.30%	100.00%
WS	32.90%	41.94%	14.19%	10.97%	100.00%	WS	39.30%	46.60%	10.80%	3.20%	100.00%
Total	28.43%	47.00%	13.10%	11.46%	100.00%	Total	38.10%	45.10%	12.10%	4.70%	100.00%



# Stratification of sample sites Band 1 cont...

- An assessment of the new approach has been carried out using the sample data from last years modelling
- To make the sample representative of the population, an exercise was undertaken by adjusting the sample numbers until the proportions matched the population as closely as possible.
- The tables displayed on the next slide show the adjustments made (e.g. 100% means no sample points were removed and 27% means 73% of the sites were removed).
- The total percentage difference shows how much the sample would have been reduced by in comparison to the original sample numbers.

# Stratification of sample sites Band 1 cont...

No. of sites	AQ Range				Total
	0	10,000	20,000	30,000	
LDZ	10,000	20,000	30,000	73,200	
EA	56	69	18	7	150
EM	31	45	11	4	91
NE	48	66	19	8	141
NO	46	63	16	5	130
NT	43	45	15	7	110
NW	44	52	13	5	114
SC	40	47	14	6	107
SE	54	60	18	8	140
SO	44	52	13	5	114
SW	78	67	12	5	162
WM	53	72	19	6	150
WN	0	0	0	0	0
WS	51	59	13	4	127
<b>Total</b>	588	697	181	70	1536
<b>Difference</b>	0	-275	-90	-167	-532

% of sample points used by LDZ	AQ Range			
	0	10,000	20,000	30,000
	10,000	20,000	30,000	73,200
EA	100%	69%	72%	27%
EM	100%	48%	52%	16%
NE	100%	88%	67%	27%
NO	100%	92%	76%	30%
NT	100%	60%	50%	30%
NW	100%	59%	81%	19%
SC	100%	74%	63%	20%
SE	100%	71%	66%	55%
SO	100%	53%	59%	18%
SW	100%	85%	65%	40%
WM	100%	82%	86%	40%
WN	0%	0%	0%	0%
WS	100%	90%	55%	20%
<b>Percentage Difference</b>	0%	-28%	-33%	-70%

# Stratification of sample sites Band 1 cont...

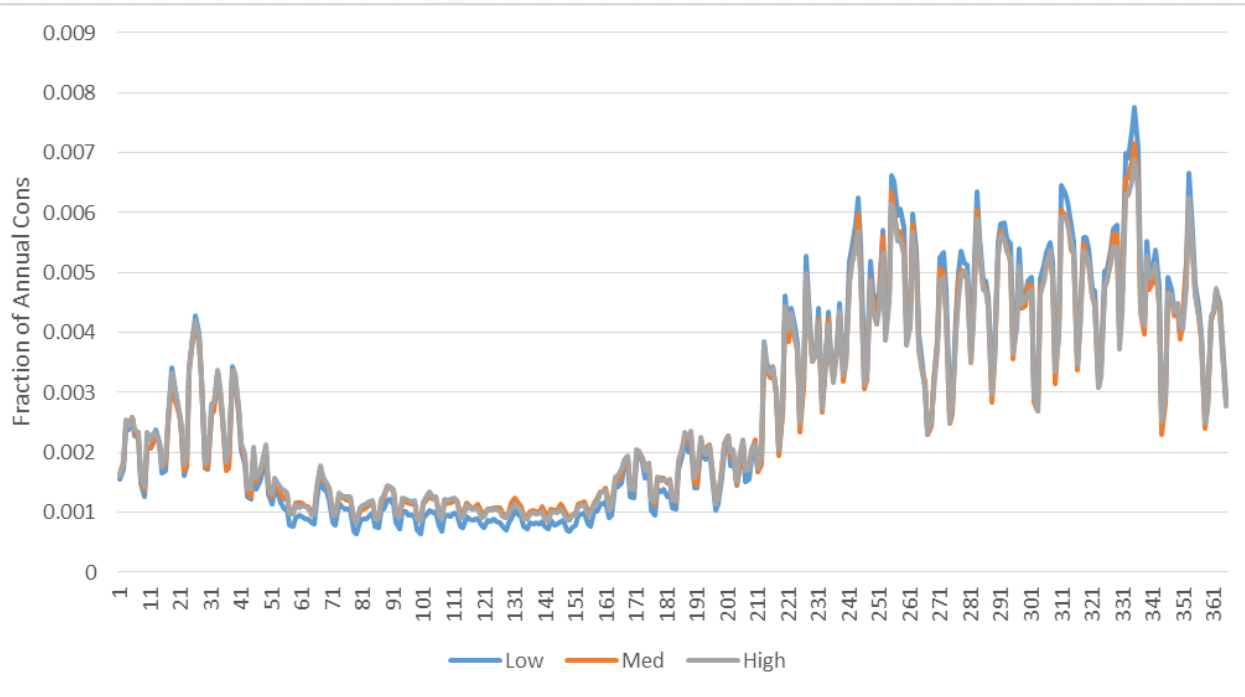
The table below compares the sample distribution (after stratifying the data) against the population distribution.

<u>Sample</u>						<u>Population</u>					
LDZ	0 – 10 MWh pa	10 – 20 MWh pa	20 – 30 MWh pa	30 – 73.2 MWh pa	Total	LDZ	0 – 10 MWh pa	10 – 20 MWh pa	20 – 30 MWh pa	30 – 73.2 MWh pa	Total
EA	37.33%	46.00%	12.00%	4.67%	100.00%	EA	37.10%	46.30%	12.10%	4.60%	100.00%
EM	34.07%	49.45%	12.09%	4.40%	100.00%	EM	34.50%	49.10%	12.30%	4.00%	100.00%
NE	34.04%	46.81%	13.48%	5.67%	100.00%	NE	34.60%	46.70%	13.40%	5.30%	100.00%
NO	35.38%	48.46%	12.31%	3.85%	100.00%	NO	34.90%	48.70%	12.50%	3.90%	100.00%
NT	39.09%	40.91%	13.64%	6.36%	100.00%	NT	39.60%	40.30%	13.60%	6.50%	100.00%
NW/WN	38.60%	45.61%	11.40%	4.39%	100.00%	NW/WN	38.40%	45.80%	11.60%	4.20%	100.00%
SC	37.38%	43.93%	13.08%	5.61%	100.00%	SC	37.80%	43.50%	13.30%	5.40%	100.00%
SE	38.57%	42.86%	12.86%	5.71%	100.00%	SE	39.20%	42.60%	12.70%	5.60%	100.00%
SO	38.60%	45.61%	11.40%	4.39%	100.00%	SO	39.00%	45.30%	11.40%	4.30%	100.00%
SW	48.15%	41.36%	7.41%	3.09%	100.00%	SW	47.90%	41.30%	7.70%	3.10%	100.00%
WM	35.33%	48.00%	12.67%	4.00%	100.00%	WM	35.30%	48.00%	12.50%	4.30%	100.00%
WS	40.16%	46.46%	10.24%	3.15%	100.00%	WS	39.30%	46.60%	10.80%	3.20%	100.00%
<b>Total</b>	<b>38.28%</b>	<b>45.38%</b>	<b>11.78%</b>	<b>4.56%</b>	<b>100.00%</b>	<b>Total</b>	<b>38.10%</b>	<b>45.10%</b>	<b>12.10%</b>	<b>4.70%</b>	<b>100.00%</b>

# Stratification Band 2

- DESC agreed to consider a similar stratification process for Band 2
- TWG member Jason Blackmore (British Gas) carried out some cluster analysis on the Band 2 sample data and proposed the following sub bands:
  - 73,200 to 140,000 KWh
  - 140,001 to 210,000 KWh
  - 210,001 to 293,000 KWh
- The analysis was based on the following criteria:
  - 17/18 sample data (using the demands and CWV's as the variables within the cluster analysis)
  - all 13 LDZs
  - Non domestic sites only

# Stratification Band 2 cont...



- The findings from the analysis suggested the following:
  - Low AQ consumption patterns are generally lower in the summer and show much greater demand variability in the Winter.
  - High AQ consumption patterns are higher in the summer – show less seasonality.
  - Med AQ are between the two.

## Stratification Band 2 cont...

	73,200	140,001	210,001	
LDZ	140,000	210,000	293,000	Total
EA	273	212	172	657
EM	219	192	149	560
NE	122	108	63	293
NO	90	78	68	236
NT	226	154	117	497
NW	171	160	140	471
SC	304	295	305	904
SE	190	140	118	448
SO	173	144	96	413
SW	175	122	85	382
WM	214	163	142	519
WN	26	10	11	47
WS	64	43	16	123
Total	2247	1821	1482	5550

- This table shows the number of sample points from 2017/18 data within Band 2 and the proposed sub bands, by LDZ.

## Stratification Band 2 cont...

- The tables below shows the distribution of the sample and population by LDZ within the suggested sub bands:

Sample				
LDZ	73.2 - 140 MWh pa	140 - 210 MWh pa	210 - 293 MWh pa	Total
EA	41.55%	32.27%	26.18%	100.00%
EM	39.11%	34.29%	26.61%	100.00%
NE	41.64%	36.86%	21.50%	100.00%
NO	38.14%	33.05%	28.81%	100.00%
NT	45.47%	30.99%	23.54%	100.00%
NW	36.31%	33.97%	29.72%	100.00%
SC	33.63%	32.63%	33.74%	100.00%
SE	42.41%	31.25%	26.34%	100.00%
SO	41.89%	34.87%	23.24%	100.00%
SW	45.81%	31.94%	22.25%	100.00%
WM	41.23%	31.41%	27.36%	100.00%
WN	55.32%	21.28%	23.40%	100.00%
WS	52.03%	34.96%	13.01%	100.00%
<b>Total</b>	<b>40.49%</b>	<b>32.81%</b>	<b>26.70%</b>	<b>100.00%</b>

Population				
LDZ	73.2 - 140 MWh pa	140 - 210 MWh pa	210 - 293 MWh pa	Total
EA	58.91%	25.45%	15.64%	100.00%
EM	57.95%	25.61%	16.45%	100.00%
NE	59.51%	24.99%	15.51%	100.00%
NO	58.92%	25.04%	16.03%	100.00%
NT	56.57%	26.32%	17.10%	100.00%
NW	58.11%	25.37%	16.52%	100.00%
SC	57.64%	25.07%	17.29%	100.00%
SE	60.26%	24.59%	15.16%	100.00%
SO	57.53%	26.50%	15.97%	100.00%
SW	59.65%	24.88%	15.47%	100.00%
WM	57.84%	25.77%	16.39%	100.00%
WN	59.96%	24.85%	15.19%	100.00%
WS	59.70%	24.53%	15.77%	100.00%
<b>Total</b>	<b>58.40%</b>	<b>25.42%</b>	<b>16.18%</b>	<b>100.00%</b>

# Stratification Band 2 cont...

- To make the sample representative of the population, an exercise was undertaken by adjusting the sample numbers until the proportions matched the population as closely as possible. The following table shows the adjustments that were made to the sample numbers:

No. of sites	73,200	140,001	210,001	
LDZ	140,000	210,000	293,000	Total
EA	273	119	73	465
EM	217	96	62	375
NE	121	51	32	204
NO	89	38	24	151
NT	204	94	61	359
NW	170	74	48	292
SC	304	133	92	529
SE	190	77	48	315
SO	167	77	46	290
SW	174	72	45	291
WM	212	95	60	367
WN	24	10	6	40
WS	61	25	16	102
<b>Total</b>	<b>2206</b>	<b>961</b>	<b>613</b>	<b>3780</b>
<b>Difference</b>	<b>-41</b>	<b>-860</b>	<b>-869</b>	<b>-1770</b>

% of sample points used by LDZ	73,200 140,000	140,001 210,000	210,001 293,000
EA	100%	56%	42%
EM	99%	50%	41%
NE	99%	47%	50%
NO	98%	48%	35%
NT	90%	61%	52%
NW	99%	46%	34%
SC	100%	45%	30%
SE	100%	55%	40%
SO	96%	53%	47%
SW	99%	59%	52%
WM	99%	58%	42%
WN	89%	91%	54%
WS	94%	58%	100%
<b>Percentage Difference</b>	<b>-2%</b>	<b>-47%</b>	<b>-59%</b>



# Stratification Band 2 cont...

- The tables below compare the sample distribution (after stratifying the data) against the population distribution:

<u>Sample</u>					<u>Population</u>				
LDZ	73.2 – 140 MWh pa	140 – 210 MWh pa	210 – 293 MWh pa	Total	LDZ	73.2 – 140 MWh pa	140 – 210 MWh pa	210 – 293 MWh pa	Total
EA	58.71%	25.59%	15.70%	100.00%	EA	58.91%	25.45%	15.64%	100.00%
EM	57.87%	25.60%	16.53%	100.00%	EM	57.95%	25.61%	16.45%	100.00%
NE	59.31%	25.00%	15.69%	100.00%	NE	59.51%	24.99%	15.51%	100.00%
NO	58.94%	25.17%	15.89%	100.00%	NO	58.92%	25.04%	16.03%	100.00%
NT	56.82%	26.18%	16.99%	100.00%	NT	56.57%	26.32%	17.10%	100.00%
NW	58.22%	25.34%	16.44%	100.00%	NW	58.11%	25.37%	16.52%	100.00%
SC	57.47%	25.14%	17.39%	100.00%	SC	57.64%	25.07%	17.29%	100.00%
SE	60.32%	24.44%	15.24%	100.00%	SE	60.26%	24.59%	15.16%	100.00%
SO	57.59%	26.55%	15.86%	100.00%	SO	57.53%	26.50%	15.97%	100.00%
SW	59.79%	24.74%	15.46%	100.00%	SW	59.65%	24.88%	15.47%	100.00%
WM	57.77%	25.89%	16.35%	100.00%	WM	57.84%	25.77%	16.39%	100.00%
WN	60.00%	25.00%	15.00%	100.00%	WN	59.96%	24.85%	15.19%	100.00%
WS	59.80%	24.51%	15.69%	100.00%	WS	59.70%	24.53%	15.77%	100.00%
<b>Total</b>	<b>58.36%</b>	<b>25.42%</b>	<b>16.22%</b>	<b>100.00%</b>	<b>Total</b>	<b>58.40%</b>	<b>25.42%</b>	<b>16.18%</b>	<b>100.00%</b>

# Stratification – DESC thoughts

- Stratifying the sample data in Band 1 and 2 (where the vast majority of the NDM population resides) to make the sample more representative of the population would be following good practice
- However, this would mean an overall reduction of sample sites used in the modelling (Band 1: approximately 530 sites would be removed and Band 2 would have 1770 sites removed), which would be a further reduction in comparison to the target sample size (see Appendix 6 in the Draft Spring Approach document)
- The contributions from 3<sup>rd</sup> parties for these Bands (and others) would be essential in ensuring sample numbers available for modelling are closer to the suggested target numbers
- Are DESC happy to approve this approach for Spring 2019 ?

# Spring Approach 2019 – Modelling

- The latest version of the Spring Approach document for the 2019 analysis is available on the Joint Office website:
  - DESC – 2019 Meetings - 11 Feb 2019 DESC - “4.0 Modelling Approach to Spring 2019 Draft”
- The next few slides summarise the high level modelling principles from the current version of the draft document

# Spring Approach 2019 – Industry Changes

- Spring Approach 2019 is required ultimately to deliver a set of Derived Factors for use in Gemini and SAP-ISU for Gas Year 2019/20 and will be impacted this year by the following industry changes / discussions:
  - New End User Categories (change proposal – XRN4665) for Bands 1 and 2. Introduces additional EUCs to represent Domestic in Band 2, Non-Domestic in Band 1 and Pre-payment in Band 1 and 2.
  - UNC Modification 0654 (mandating the provision of NDM sample data) implements on 1<sup>st</sup> March 2019 – likely to lead to additional streams of sample data to CDSP
  - Investigations performed by **UIG Task Force** include a review of NDM demand models. Recommendations from this work, where possible, have been included in Spring Approach and referenced during the presentation

# Spring Approach 2019 – Demand Estimation Changes

- In anticipation of discussions around additional EUC for Bands 1 and 2, last year DESC produced additional EUC demand models to represent:
  - i) meter points in Band 1 (0-73.2 MWh pa) which are categorised as non-domestic
  - ii) meter points in Band 1 which use pre-payment meters
  - iii) meter points in Band 2 (73.2-293 MWh pa) which are categorised as domestic
- The 2019 Spring approach will use the same additional set of models, however this will be reliant upon receiving the appropriate sample data
- **UIG Task Force** investigations supports this approach, quote from UIG Investigations Tracker (13.2.5): *“There is a difference between the EUC1 Industrial/Commercial and Domestic behaviours. This corroborates the planned segmentation into EUCs based on the I/C & D split.”*

# Spring Approach 2019 – End User Categories ( Bands 1-2)

- EUC Definitions and Demand Models for Bands 1 and 2
  - For some EUCs it is unlikely sample data will be provided due to low population numbers and so an alternative model will be used

Consumption Band	EUC	Description	No. of Demand Models expected	Model to use
1	xx:Eyy01BND	Domestic	1	
	xx:Eyy01BPD	Prepayment Domestic	1	
	xx:Eyy01BNI	I&C	1	
	xx:Eyy01BP1	Prepayment I&C	0	xx:Eyy01BNI
2	xx:Eyy02BND	Domestic	1	
	xx:Eyy02BPD	Prepayment Domestic	0	xx:Eyy01BPD
	xx:Eyy02BNI	I&C	1	
	xx:Eyy02BPI	Prepayment I&C	0	xx:Eyy02BNI

# Spring Approach 2019 – End User Categories (Remaining)

EUC Band	AQ Range From: (Kwh pa)	AQ Range To: (Kwh pa)	WAR Bands W01 to W04	No. of Demand Models req'd
03	293,001	732,000	✓	5
04	732,001	2,196,000	✓	5
05	2,196,001	5,860,000	✓	5
06	5,860,001	14,650,000	✓	5
07	14,650,001	29,300,000	✓	5
08	29,300,001	58,600,000	✓	5
09	58,600,001		x	1

- Bands 3 to 9 unchanged
- This will mean a total of 39 EUCs per LDZ utilising 36 Demand Models

# Spring Approach 2019 – Demand Estimation Changes

- Filton weather station closed early October '18. DESC agreed to use Yeovilton as a substitute for LDZ SW – this will mean demand models for LDZ SW will be developed using a combination of actual Filton and pseudo Filton CWVs
- As discussed with DESC previously, the current modelling system which creates the Demand Models and Derived Factors has some inflexibilities and is being addressed via an internal project to replace the processes and systems Xoserve use
- Due to resource constraints and support to UIG Task Force work it has not been possible to get a replacement system up and running to be ready in time for Spring 2019 modelling, however progress is now being made and we are planning to run the process in parallel



# Spring Approach 2019 – Modelling Approach 1

- Demand Data:
- For Spring 2019 analysis, daily consumption will be required for the period 22<sup>nd</sup> February 2018 to 7<sup>th</sup> April 2019, with the main analysis period being 1<sup>st</sup> March 2018 to 31<sup>st</sup> March 2019
- The analysis period is 13 months due to the Easter holiday period in 2018 (as defined by the modelling system) covering days in March and April
- MOD0654S (mandating the provision of NDM sample data) becomes effective on 1<sup>st</sup> March 2019. This modification will introduce an obligation into the UNC for the provision of regular NDM sample data from Shippers to the Central Data Service Provider (CDSP).
- The sample data that is currently provided voluntarily is still required, subject to Xoserve receiving it in the required format and it passing the standard validation criteria, see document located on DESC's homepage on the Joint Office website

# Spring Approach 2019 – Modelling Approach 2

- Demand Data continued:
- In February 2018, the CDSP presented an approach for determining the ideal number of sample sites needed for each EUC in order to produce robust demand models, which DESC approved
- In Spring 2018, the number of sites in CDSP's sample for Band 1 domestic customers were less than 50% of the suggested sample size across all LDZs. Due to SMART meter roll-out we expect this number to decrease again for Spring 2019
- DESC will have to rely on third parties to provide daily consumption data for Domestic Band 1 sites and the additional categories (Non-Dom and PPM) to ensure robust models for the biggest sector of the NDM population are produced
- CDSP provided a revised view of the ideal sample size numbers based on the latest view of the population and included within the Spring Approach 2019 document

# Spring Approach 2019 – Modelling Approach 4

- Weather Data:
  - Weather data to be used will mainly be based on the output derived from the Weather Station Substitution Methodology (WSSM) project (up to 30th Sept 2012), UK Link and SAP-ISU data thereafter
  - Filton weather station has closed. This was the weather station for LDZ SW. The substitute station used to mimic Filton temperature and wind speed variables is Yeovilton (from 1<sup>st</sup> Oct 2018).
  - The EUC demand modelling to use the CWVs and SNCWVs based on the parameters and Seasonal Normal basis effective from 1<sup>st</sup> October '15

# Spring Approach 2019 – Modelling Approach 5

- Modelling Principles:
  - Band 01 continues to be modelled as 0 to 73.2 MWh but with 3 separate demand models - Domestic only supply points, Non-Domestic and Pre-Payment
  - Band 7 & 8 consumption and WAR bands to be merged for modelling purposes only, as per DESC decision in Spring 2014
  - Holiday code rules to be the same as used in Spring '18, which for the Christmas and New Year holiday period will be those agreed by DESC in November 2011
  - Warm weather analysis in order to identify those models which exhibit 'Summer Reductions' and / or 'Cut-Offs'
  - Analysis performed to assess if 'Weekend and/or Holiday effects' are necessary
  - 3 year model smoothing applied along with existing weightings for each individual year (i.e. 33:33:34) - as agreed in Autumn 2018 (DESC approved continued use of Model Smoothing)

# Spring Approach 2019 – Modelling Approach 6

- Derived Factors (ALP, DAF and PLF):
  - The Annual Load Profile (ALP) formula remains unchanged
  - The Daily Adjustment Factor (DAF) formula remains unchanged
  - The Peak Load Factor (PLF) formula remains unchanged, including the methodology for deriving the estimate of peak day demand for Small NDM and Large NDM EUCs i.e. simulation
- Fall-back position:
  - In the event the NDM proposals derived from the Spring 2019 analysis are rejected by DESC, the underlying demand models from Spring 2018 would be used - referred to as 'fall-back' proposals (UNC Section H)

# Spring Approach 2019 – Modelling Approach 7

- Reporting Output:
  - NDM Algorithms Booklet summarising the process followed, to be produced
  - Parameters for all smoothed models to be published in an Appendix to the 2019 NDM Algorithms Booklet. All other model parameters to be provided in electronic form
  - The performance evaluation summary (Section 12) to reflect the review of Algorithm Performance (Strands 1 to 4) for Gas Year 2017/18
  - The location of all supporting documents and files to be published on Xoserve's secure SharePoint site (UK Link Documentation):
    - 18.NDM Profiling and Capacity Estimation Algorithms / 2019-20 Gas Year

# Spring Approach 2019 – Interaction and Timetable

- Spring 2019 will be the 8<sup>th</sup> modelling cycle with the DESC / TWG collaborative approach to decision making and transparency
- As such please review decision / interactions timetable (Appendix 2 of Spring Approach document) which provides summary of the anticipated DESC / TWG involvement during the modelling cycle
- To ensure that the correspondence during the Spring Analysis period (April to July) between Xoserve and the TWG remains productive, please ensure the TWG representative within your organisation (as displayed on the master list on the Joint Office website) is still the most appropriate contact

# Demand Estimation Timetable 2019

High Level View of Demand Estimation Timetable 2019 - Key Checkpoints

PHASE	JAN'19	FEB'19	MAR'19	APR'19	MAY'19	JUN'19	JUL'19	AUG'19	SEP'19	OCT'19	NOV'19	DEC'19
1. MODEL PRINCIPLES												
Spring Approach 2019 Approved (DESC)		11th Feb										
2. Data COLLECTION & VALIDATION												
Sample data validated (CDSP)				15th Apr								
3. MODEL DEFINITION												
Agree Data Aggregations / WAR Band Limits (TWG)				24th Apr								
4. MODEL FITTING												
Small & Large NDM Single Year modelling review (TWG)					15th May							
5. MODEL APPLICATION												
Publication of Draft Derived Factors (CDSP)						3rd Jun						
Derived Factors Approved for wider industry (TWG/DESC)							8th Jul					
Final Approval of Derived Factors (DESC)							22nd Jul					
6. MODEL OUTPUT IN USE												
SAP-ISU and Gemini updated (CDSP)								15th Aug				
7. MODEL DEVELOPMENT												
Adhoc Work-plan approved (DESC)							22nd Jul			7th Oct		
8. MODEL PERFORMANCE												
Strands 1 to 4 reviewed (DESC)												9th Dec



# Spring Approach 2019 – DESC Decisions

- The next phase of work is to make preparations for collecting the relevant sample data and completing the Back Runs. The latter cannot be completed without an agreement from DESC on the modelling approach
- Are DESC happy to approve the principles of the EUC Modelling approach?